Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Promoting Technological Solutions to Combat	)	GN-Docket No. 13-111
Contraband Wireless Device Use in	)	
Correctional Facilities	)	
	)	

Reply Comments of CellAntenna Corporation, Howard Melamed, President

Jamming Versus Managed Access and IMSI Catching

Introduction

CellAntenna Corporation, offers the following unique perspective in the debate concerning jammers, Managed Access solutions, and IMSI Catching[1]; three methods of preventing the use of contraband cell phones within correctional facilities.

Over the past 15 years, we have designed and installed indoor Distributed Antenna Systems ("DAS") for Managed Access and IMSI Catching systems in the United States, and jamming systems around the world. In 2008, we performed a successful test of our jamming system at a correctional facility located in South Carolina. In 2010, the National Telecommunications and Information Administration ("NTIA") an agency of the United States Department of Commerce, conducted a successful jamming test at the Federal Bureau of Prisons' ("BOP") minimum-security facility in Cumberland, Maryland using our proprietary jamming equipment and technology[2]. Since

[1] An International Mobile Subscriber Identity ("IMSI") is an identification number electronically stored inside a wireless device's Subscriber Identity Module ("SIM") that uniquely identifies both the subscriber and the network operator with whom the subscriber holds an account.

[2] NTIA Report TR-10-466

2013, CellAntenna has operated an IMSI catching solution inside a correctional facility located in Florida. Given our experience and expertise with jammers, Managed Access systems, and IMSI Catching, CellAntenna is exceptionally well-qualified to provide its Reply Comments below addressing the engineering and financial challenges associated with combatting the illegal use of cell phones in correctional facilities.

We wish to thank the Commission for this opportunity to provide our Reply Comments to further the discussion of leveraging technological solutions to combat contraband wireless devices in correctional facilities.

Jamming Deployment

CellAntenna does not support the legalization of jamming devices to be the preferred means of controlling contraband cell phones at correctional facilities in the United States.

In 2007 CellAntenna petitioned the FCC promoting the limited use of jamming in the United States[3]. We fought this battle at a time when relatively few "2G" technologies were deployed by the various wireless CMRS[4] providers. Surgically controlled jamming of these second-generation networks was relatively simple given the technology of the day.

Today, times have changed. Traditional jamming of 3G and 4G LTE networks, while still technically feasible, presents challenges due to the enhanced robustness of those air-interface

[3] June 12th 2007 filing, PETITION FOR RULEMAKING Amendment of Section 2.807 of the Commission's Rules (47 CFR 52.807) to Allow the Use of Radio Frequency Jamming Equipment by Local and State Providers Law Enforcement Agencies and Emergency Response https://ecfsapi.fcc.gov/file/6519532546.pdf

[4] CMRS; as used here relates to any provider of cell phone service to the public on a for-profit basis.

Standards to withstand jamming attacks. Moreover, within the CMRS spectrum band allocations, multiple wireless networks and Standards often coexist (i.e., GSM, CDMA, UMTS and LTE). Each of these technologies occupies different sized blocks of frequency and each requires special treatment to jam effectively. With advanced "4G" and "5G" networks now operating across huge swaths of allocated spectrum, what used to be a straightforward jamming system is now a complex and expensive proposition. Deployment of jammers now necessitates fully-engineered, multiband, and multi-technology solutions to ensure that the jamming system does not cause undesirable interference to the CMRS providers' macro-cellular networks while maintaining adequate and effective disruption of all cell phones located within the confines of the correctional facility. In all cases, the deployment would require a Distributed Antenna System ("DAS") installed inside the prison to limit unintentional signal egress into the surrounding community.

RF Radiation Exposure: Jamming vs. Managed Access Systems

Commission rules set forth the limits for the safe human exposure to radio-frequency energy[5]. By its nature, jamming requires the continuous application of relatively high energy levels to overcome the incoming downlink signal from all nearby cell phone tower(s). This is accomplished using high power amplifiers in the DAS.

In contrast, Managed Access systems require levels that are significantly lower for most "3G' and "4G" technologies. The same high-power amplifiers used in jamming systems are deployed in the DAS to provide a better-quality signal on par with that of the carrier-grade base transmitter station

[5] The Commission's requirements are detailed in Parts 1 and 2 of the FCC's Rules and Regulations [47 C.F.R. 1.1307(b), 1.1310, 2.1091, 2.1093].

("BTS"). It has been our experience that rarely are there any health and safety RF exposures concerns with Managed Access systems. In contrast, Health and Safety RF exposure limits are always a concern whenever jamming is deployed.

Implementing a jamming system in today's complex radio environment requires significantly greater care in the engineering, deployment, and operation of the system, that it becomes impractical to the point of being impossible to install a simple "one-box" universal solution capable of complying with Commission RF exposure rules.

Cost: Jamming vs. Managed Access Systems

Considering the above, the cost associated with deploying jammers versus that of Managed Access systems essentially boils down to the "Smarts" of the system.

In the case of Managed Access, high-quality, "carrier-grade" signals must be broadcast on all bands using appropriate modulation protocols in order to control all cell phone access within the facility. This requirement mandates the use of carrier-grade BTS (either small cells or femtocells) equipment, and the associated core software to handle and manage cell phones just like a real CMRS provider.

With jamming, "brute force" interference signals are broadcast via software-defined radios, requiring little or no interaction with the CMRS providers, or their associated cell phones because jamming systems do not manage calls. The antennas, transmission cables, amplifiers and associated equipment are functionally interchangeable for either Managed Access or jamming. In fact , CellAntenna has one installation in another country that uses both jamming and Managed

Access in the same DAS. Based on our experience, and in consideration of the requirements and engineering challenges of a jamming system in today's complex RF environments, Managed Access commands only a 10%-15% higher price-tag compared to jamming.

Jamming Quagmire

Aside from a few directives regarding the maximum permissible signal levels to be maintained at the perimeter of the prison, and human RF exposure limits, we have yet to find any government agency anywhere in the world that either licenses or provides directives endorsing jamming equipment or Standards specifying jammer system performance. In the United States, the 1934 Communications Act prevents the use of jammers by anyone other than the Federal Government and state and local government agencies are not allowed to use them– the vast majority of correctional facilities in this country are State and Local.

It is our opinion that efforts to legalize jammers or develop and adopt any jamming standards to be used in the United States is a futile exercise[6].

IMSI Catching

IMSI catching is a non-jamming solution that involves a more limited-scale indoor DAS combined with a software defined radio (SDR) acting as the pseudo BTS. The "IMSI Catcher" monitors all cell phones operating within the DAS service area by "Catching" (i.e., recording and tabulating) the IMSI or subscriber's electronic serial number of every wireless device it detects. This information

[6] CellAntenna has tried its best – see June 12th 2007 filing, PETITION FOR RULEMAKING Amendment of Section 2.807 of the Commission's Rules (47 CFR 52.807) to Allow the Use of Radio Frequency Jamming Equipment by Local and State Providers Law Enforcement Agencies and Emergency Response https://ecfsapi.fcc.gov/file/6519532546.pdf

identifies the subscriber and his wireless service provider. Once captured, the tabulated list is sorted and provided to each carrier. The associated CMRS provider subsequently unsubscribes the cell phone equipment from their service rendering the device unusable, but still capable of placing "911 Emergency calls"[7].

None of the cell phones are controlled as in the Managed Access system, and all cell phones continue to function until the CMRS provider unsubscribes the phone. Importantly, legitimate cell phones, such as those belonging to prison guards and contractors, continue to function normally without any adverse effects.

The IMSI Catching system may be made portable and scalable, moving it from facility-to-facility on an as-needed basis, without the requirement that a DAS be deployed. In contrast to Managed Access, the goal of IMSI Catching is to reduce the prevalence of contraband cell phones within a facility over a short period of time. It is not intended to provide the instantaneous 24/7 operational control of cell phones that a Managed Access systems offers.

In one Florida prison, our IMSI Catching system utilizes a minimal DAS component and has been in continuous operation for the past 4.5 years. The only task remaining to make IMSI catching successful is for government and the Carriers to devise and implement an appropriate Court Order that will streamline the process of disconnecting contraband cell phones. Currently we are working

[7] In CellAntenna's experience the need for 911 calls to be able to be put through on a Managed Access system only has given the inmate who has an illegal phone the ability to harass the 911 operators, often female. There are reasons to allow this access in a prison since alternative methods of emergency calling are readily available including land phones and two way radios. This issue has increased the cost of the Managed Access system needlessly.

with one of the carriers on a Court Order process, which if successful, would provide a nationwide procedure that can be easily adopted by all CMRS providers and any correctional facility.

The FCC has also expressed that it may continue its rulemaking and thereby codify a process to disconnect contraband cell phones found in correctional facilities[8]. However, this process could lead to further delays in implementation and place additional burdens upon the Carriers, who may prefer a judicial process rather than a regulatory one.

Cost : IMSI Catching vs. Managed Access vs Jamming

The deployment of an IMSI catching solution is at least 75% less costly compared to Managed Access or jamming systems. It provides a reasonably effective approach for budget-challenged applications, and in cases where the level of security at a facility does not require Managed Access 24/7 control capability.

Conclusion - Funding is the Real Issue

CellAntenna believes that the lack of funding is the reason correctional facilities seek to legalize jamming.

As mentioned above, there exist alternative solutions to jamming that are already legally available to correctional facilities – namely Managed Access and IMSI catching. Jamming has become too

[8] FCC FACT SHEET: Promoting Technological Solutions to Combat Contraband Wireless Device Use in Correctional Facilities Report and Order and Further Notice of Proposed Rulemaking – GN Docket 13-111, Section IV. FURTHER NOTICE OF PROPOSED RULEMAKING, I. Disabling Contraband Wireless Devices in Correctional Facilities, paragraphs 82-121.

complex and offers too many risks and time delays to even be considered and is now no longer any more cost effective than a Managed Access solution.

However, the real reason Managed Access or IMSI catching are not being deployed is that **most correctional facilities have little or no funding** available to counter the widespread and growing problem of contraband cell phone use by inmates.

There have been efforts to mitigate these costs by forcing the providers of inmate landline communication services to absorb the expense as part of their normal fees. These arrangements have failed largely because the costs of these systems are too high to amortize over contract costs. Public pressure has curtailed the ability for these companies to recover their costs via the rates paid by inmates for landline usage. Not surprisingly, only a handful of the more than 2,000 correctional facilities have any system that thwarts contraband cell phones.

Every RF based system that is used to combat contraband cell phones in a prison must be properly engineered. As a such, the minimal cost difference between a properly engineered jamming system and Managed Access militates against the mass deployment of either solution. Even the affordable IMSI catching solution requires funding.

There needs to be an end to the discussion of jamming - a system that is contentious and poses engineering challenges and will never be accepted in the United States. Instead, serious efforts are required by Government to provide the funds necessary to deploy systems that are already legal and

can provide immediate relief to the problem of contraband cell phones in the more than 2,000 correctional facilities in the United States; Namely, Managed Access and IMSI Catching.

Dated: December 28, 2017

Respectfully Submitted,

/S/ Howard Melamed

Howard Melamed, President
CellAntenna Corporation
12453 NW 44th Street
Coral Springs, Florida 33065
(954) 340-7053